

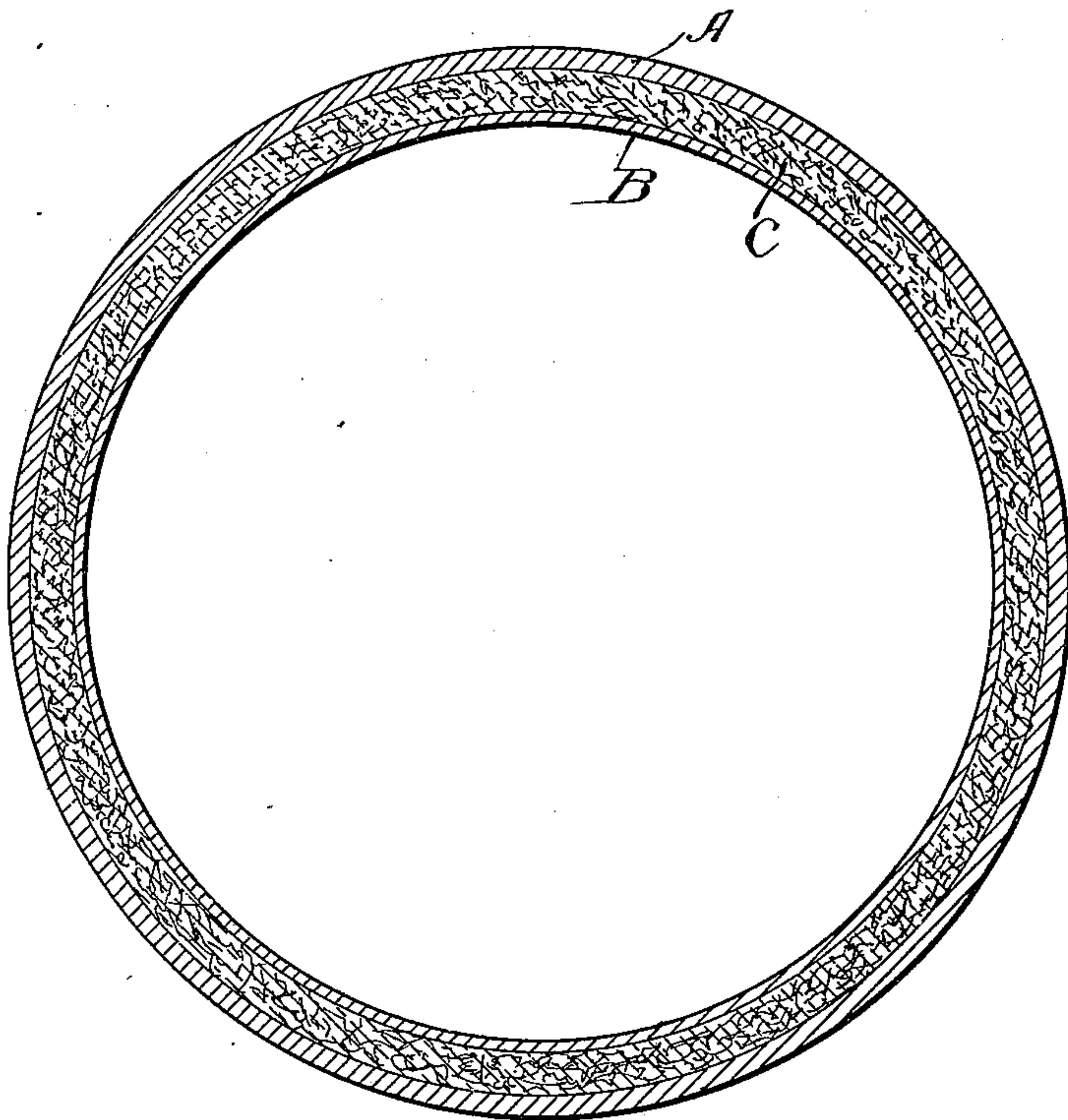
No. 631,328.

Patented Aug. 22, 1899.

J. ROWE.
LINED TUBING.

(Application filed Apr. 22, 1899.)

(No Model.)



Witnesses:
Wm B. Snowhook.
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UNITED STATES PATENT OFFICE.

JAMES ROWE, OF CHICAGO, ILLINOIS.

LINED TUBING.

SPECIFICATION forming part of Letters Patent No. 631,328, dated August 22, 1899.

Application filed April 22, 1899. Serial No. 714,123. (No model.)

To all whom it may concern:

Be it known that I, JAMES ROWE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have
5 invented certain new and useful Improvements in Lined Tubing; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it
10 appertains to make and use the same.

My invention relates to a novel construction in lined tubing adapted for use in molds for casting printers' rollers and other purposes, the object being to provide a device of
15 this character which is protected against denting, bending, and becoming otherwise untrue and which can be interiorly finished without danger of being affected in the manner above described; and it consists in the features of
20 construction hereinafter fully described and claimed.

The accompanying drawing, illustrating my invention, represents a transverse sectional view of a tube constructed in accordance with
25 my invention.

In the manufacture of molds for casting printers' rollers a great difficulty has always been experienced in producing a true cylinder and one having sufficient strength to remain true. These molds are generally made
30 of brass tubing, and to obtain the requisite strength heavy tubing has been employed. This is very expensive and besides fails to entirely overcome the objections noted. Various devices have been tried, such as inclosing brass tubing in a steel tube, and I have made experiments in this direction also, but without attaining the desired results.
35 After many experiments I have finally succeeded in producing the device shown in the accompanying drawing, which has proved entirely satisfactory.

My present invention consists in providing two concentric tubes A and B of the same or
45 different materials and of sufficiently different diameters to leave an annular space between them which is filled with compressed cement or other suitable material introduced in a plastic condition. The inner tube B is
50 preferably a light brass tube, while the tube A may be ordinary gas-pipe. The cement is preferably a mixture of litharge and glycerin

in the proportion by weight of approximately three parts litharge to one part glycerin, which sets quickly and is not affected by temperature, besides being able to withstand high
55 pressures. The cement mixture is introduced between said tubes under very high pressure by means of suitable apparatus and is held under such pressure until it is set. In order
60 to produce a true inner tube, the latter is first placed over a mandrel of corresponding diameter and the degree of pressure brought to bear upon the cement filling is sufficient to
65 force the inner tube so closely upon the mandrel as to press out any irregularities in the inner tube.

The advantages of this construction are many. In the first place I am enabled to employ an outer casing of unfinished pipe, which
70 could not be employed were the inner tube to be forced into and fit snugly within the outer tube. Thus I avoid the expense of finishing the outer tube interiorly. In the second place I am enabled to employ a very light inner
75 tube, since the latter is not subjected to any strain, as would be the case were it to be forced into the outer tube, thus enabling me to employ a lighter tube than would be possible where the two tubes are fitted to each other. 80
Third, the increased thickness of the wall of the complete tube due to the layer of cement so stiffens and reinforces the two tubes as to enable them to bear far greater strain without bending or affecting them in any way as
85 to enable me to employ a much thinner and lighter outer tube than would otherwise be possible. Fourth, by the use of thin tubes I greatly decrease the weight of the finished tube, while at the same time I increase its
90 strength to a far greater degree than would be possible without the compressed filling. Fifth, by the use of light tubing I save a great deal of expense in material, and, sixth, the ease of manufacturing the tube makes it far
95 less expensive than any other form of lined tubing.

Molds for printers' rollers are frequently eight and ten feet in length, so that it will readily be seen that it is a difficult matter to
100 produce a tube which will remain absolutely true without greatly increasing the cost and weight of the mold.

My device can obviously also be used for

other purposes, such as the manufacture of engine cylinders and valves and for all purposes generally where lined tubes are desirable.

5 I claim as my invention—

1. A tube comprising two concentric tubes having an annular space between them, and a compressed filling in said annular space, said filling being introduced under pressure
10 and allowed to harden in the presence of such pressure.

2. A tube comprising two concentric tubes having an annular space between them, and a compressed cement filling in said annular
15 space, said filling being introduced under pressure and allowed to harden in the presence of such pressure.

3. A tube comprising an outer heavy tube, and a light concentric inner tube, an annular
20 space between said tubes, and a compressed filling in said annular space, said filling being

introduced and allowed to harden under a pressure sufficient to contract said inner tube upon a mandrel inserted therein.

4. As a new article of manufacture, a tube 25 comprising two concentric tubes and an interposed layer of compressed filling, said tube having the characteristics hereinbefore set forth.

5. As a new article of manufacture, a tube 30 comprising two concentric tubes and an interposed layer of compressed cement, said tube having the characteristics hereinbefore set forth, obtained by introducing said filling in plastic condition under pressure and al- 35 lowing it to set while under such pressure.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES ROWE.

Witnesses:

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